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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,582	04/16/2004	Rolf Pfeifer	3926.081	1763
30448	7590	05/15/2007		
AKERMAN SENTERFITT P.O. BOX 3188 WEST PALM BEACH, FL 33402-3188			EXAMINER LIN, ING HOUR	
			ART UNIT 1725	PAPER NUMBER
			MAIL DATE 05/15/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/826,582	Applicant(s) PFEIFER ET AL.	
	Examiner Ing-Hour Lin	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 21-22, 25-27, and 30-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Nagai et al.

Marcus et al (col. 6 lines 56+) teach the claimed investment casting mold and insert (core) for casting metals including porous ceramic produced by selectively sintering on binder coated ceramic particles, and teach methods of producing a green casting mold by rapid prototyping method including 3D construction using CAD/CAM system and laser beam for sintering a first layer of composite ceramic powders deposited on support plate (target surface), wherein the powder comprising alumina particles coated by polymer binder and finer ammonium

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dihydrogen phosphate having lower sintering temperature. Marcus et al fail to teach the use of resin having relatively high thermal expansion coefficient required for coating the coarse alumina particle.

However, Nagai et al (col. 2, lines 20+) teach the use of bonding or coating resin having relatively high thermal expansion coefficient of $(3-10 \times 10^{-6} \text{ K}^{-1})$ and melted silica forming ceramic core layer for the purpose of matching thermal expansion. It would have been obvious to one having ordinary skill in the art to provide Marcus et al the use of bonding or coating resin having relatively high thermal expansion coefficient of $(3-10 \times 10^{-6} \text{ K}^{-1})$ forming ceramic core layer as taught by Nagai et al in order to effectively increase thermal expansion coefficient of core and mold for matching metal cast and improving casting quality of precision.

4. Claims 23-24 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Nagai et al and further in view of either Zoia et al or Smith et al.

Marcus et al in view of Nagai et al fails to teach the use of optimal design including reinforcing ribs and cooling channels and support including back-fed ceramic material.

However, Zoia et al (col. 3, lines 3+) teach the use of optimal design including reinforcing ribs 100 and cooling channels for the purpose of controlling both strength and structure. Smith et al (col.4, lines 10+) teach the support including back-fed ceramic material such as unconsolidated mold 41 formed from alumina for the purpose of supporting the mold during casting. It would have been obvious to one having ordinary skill in the art to provide Marcus et al in view of Nagai et al the use of optimal design including reinforcing ribs and cooling channels as taught by Zoia et al in order to effectively control both strength and structure

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and the use of support including back-fed ceramic material as taught by Smith et al in order to effectively support the mold during casting.

5. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marcus et al in view of Nagai et al and further in view of Kington.

Marcus et al in view of Nagai et al fails to teach the use of matching the coefficient of thermal expansion between the casting mold and the supper alloys to be cast in the mold.

However, Kington (col. 1, lines 43+) teaches the use of matching the coefficient of thermal expansion between the casting mold and the Ni-supper alloys to be cast in the mold for the purpose of preventing porosity in the cast alloys. It would have been obvious to one having ordinary skill in the art to provide Marcus et al in view of Nagai et al the use of matching the coefficient of thermal expansion between the casting mold and the Ni-supper alloys to be cast in the mold as taught by Kington in order to prevent porosity in the cast alloys.

Response to Arguments

6. Applicant's arguments with respect to claims 21-40 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ing-Hour Lin whose telephone number is (571) 272-1180. The examiner can normally be reached on M-F (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

IHL

I.-H. Lin

5/10/07

KEVIN KERNS
PRIMARY EXAMINER

Kevin Kerns 5/11/07